Spring 5-13-2022

The Impact of Distance Education on Therapy Services for Students with ASD: An SLP Perspective

Andrea Spragg
andrea.spragg@go.mnstate.edu

Impact of distance education on therapy services for students with ASD: An SLP perspective

A Thesis Presented to

The Graduate Faculty of

Minnesota State University Moorhead

By

Andrea K. Spragg

In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in

Speech Language Pathology

April 2022

Moorhead, MN

Announcement of Oral Examination

Name of Candidate:	Andrea Spragg
Degree Program and Major:	Master of Science Speech/Language Pathology
Thesis Title:	Impact of Distance Education on Therapy Services for Students with ASD: An SLP Perspective
Date and Time:	April 11th, 2022, 4:00 PM
Examining Committee:	Elaine Pyle, Ph.D., M.S./CCC-SLP, Chairperson Rachel Stotts, M.S./CCC-SLP Jill Beuckens, M.S./CCC-SLP Shirley Johnson, PhD.

Thesis Abstract

The coronavirus disease of 2019 (COVID-19) pandemic caused an abrupt change in the day-to-day lives of individuals across the world as adults were forced to work from home and children were forced into virtual school environments. For all students, this disruption in schedule and daily routine been hard, but especially those with autism spectrum disorder (ASD) (Mumbardo-Adam et al., 2021). For many students with ASD, school is a place in which they receive many essential services and social interactions, such as speech therapy, that they may not receive other places. The purpose of this survey research was to understand the speech-language pathologist's perceptions of the effects distance learning had on the quality and delivery of speech therapy services provided to students with ASD amidst the COVID-19 pandemic. Results revealed that the 2020-2021 school-year provided SLPs across the country with a novel experience, that was unique for each individual. Current findings will be discussed and compared to previous research related to efficacy of distance learning.

Keywords*:* Autism, Service Delivery, COVID-19, Telepractice

Acknowledgements

This paper would not be complete without acknowledging the immense support and encouragement I received from others during the process. I want to extend an enormous thank you to my friends for their constant support, encouragement, and understanding for the times I was simply “too busy”. Thank you to my entire family for their supportive words, prayers, and always believing in me. A special thank you to my parents who have always pushed me to follow my dreams and stood behind me every step of the way. Without you, I would not be where I am today.

I would also like to thank the faculty and staff of the Speech-Language Pathology department at Minnesota State University Moorhead. I am grateful to have learned from each of you throughout my educational career. Thank you to Mrs. Stotts for encouraging me to get into research as an undergraduate student which led to my desire to complete a thesis. A special thank you to my writing supervisor, Dr. Pyle, for her willingness to help me turn my idea into a thesis, her constant support, and for hand-stuffing 2,000 envelopes with me (thank you to Monnie and Lonnie for that too!). Thank you for lending your knowledge and support to this project.

This thesis was not completed through just my own strength, but through the strength of all those who have been standing behind me this whole way. Without all of you, this thesis would not have been possible.

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Chapter I

Introduction

In the spring of 2020, the world faced a new problem as a new strain of coronavirus, named coronavirus disease of 2019 (COVID-19), became the latest global pandemic. According to the World Health Organization (WHO), COVID-19 is a respiratory illness that "spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes" and is more contagious than previous strands of the coronavirus (n.d.). Based on recommendations from health organizations such as WHO and the Center for Disease and Control Prevention (CDC), state governments within the United States began to implement "stay at home" orders and mask mandates (CDC, 2021). This encouraged citizens to stay home and take steps to prevent further spread of the virus. These orders had a significant impact on the day to day lives and activities of American citizens across the country as many adults were forced to work from home and children were forced into virtual school environments.

These virtual school environments are commonly referred to as distance education or distance learning. This change of learning modality (i.e., distance learning) impacts not only the classroom, but also delivery of support services such as speech therapy, physical therapy, or special education classroom settings. A virtual school environment means that these therapies now take place in a format referred to as "teletherapy" or "telepractice". According to the American Speech Language and Hearing Association (ASHA), telepractice is when technology is used to provide "the delivery of speech language pathology and audiology professional services at a distance by linking clinician to client" (n.d.-c).

Although telepractice has been an acceptable modality, it was not a widespread, common modality. The complete switch to telepractice was an abrupt change for practicing speech

language pathologists (SLPs). The field of speech pathology typically requires being face-to-face with clients and incorporates materials that are hands-on. ASHA also states that telepractice services must still be delivered at a quality level equivalent to services provided when in-person (n.d.-c). Despite the impact COVID-19 had on the world, the number of clients needing to receive services from an SLP has not declined. Speech therapy continues to be an important part of life for a variety of clients, and it is pertinent that these skilled services continue to be delivered (Tohidast, 2020).

The change to distance education caused a disruption in schedule and daily routine that has been hard on all students, but especially those with autism spectrum disorder (ASD) (Mumbardo-Adam et al., 2021). ASD is "a developmental disorder that affects communication and behavior (National Institute of Mental Health [NIMH], n.d.). According to the 5th edition of the diagnostic and statistical manual of mental health disorders, individuals with ASD often have a hard time communicating with others, exhibit restricted interests, and engage in repeated behaviors that affect their day-to-day life and ability to participate (NIMH, n.d.). For many of these students with ASD, school is a place in which they receive many essential services and social interactions that they may not receive from other places. Additionally, the families of students with ASD are impacted. Many of these students have families that include other children and as a result are supporting multiple children who are receiving distance education (Mumbardo-Adam et al., 2021). Mumbardo-Adam et al. also notes that these parents do not necessarily have the training to be teaching and educating their child (2021). This provides a potential barrier for these students to attend to and receive adequate services.

Typical speech therapy service delivery for students with ASD in a school would include interactive activities. The services would often include being hands-on and may include social

interactions with other students and individuals within the school (ASHA, n.d.-a). These natural social interactions were likely eliminated amidst the COVID-19 pandemic and changed the way that speech therapy services occur.

As technology has improved in recent years, research has begun to focus on the use of telepractice and understanding if this is an adequate form of service delivery (Boisvert et al., 2010). In 2010 a systematic review was completed by Boisvert et al. which looked specifically at the effectiveness of telepractice in assessing individuals with potential ASD. The results demonstrated that telepractice is a promising form of service delivery, however, more research is needed in the area (Boisvert et al., 2010). A later systematic review conducted by Wales et al. had similar conclusions to the previous research. They concluded that that there is evidence pointing towards telepractice being a promising form of service delivery if proper supports are in place (Wales et al., 2017).

Purpose and Overview of the Study

The purpose of this study is to understand the impact that distance learning had on the quality and scope of speech therapy services provided to students with ASD amidst the COVID-19 pandemic, using a non-experimental survey design. The goal was to learn what factors have had either a positive or negative effect on the quality of services that SLPs were able to provide from the perspective of the professionals conducting therapy (i.e., SLPs). Previous research has focused on a parent's perspective (Lam et al., 2021), whereas this study provides a unique perspective of an SLP. Research has reviewed the effects of distance education on students with ASD (Levante et al., 2021; Manning et al., 2021; Mumbardo-Adam et al., 2021) and the effects of general speech telepractice (Boisvert et al., 2010; Sutherland et al., 2018), but have yet to look at the effects on speech therapy services being delivered via telepractice for these same students.

Research Questions

The research was guided by the following questions: 1) How has the COVID-19 pandemic impacted the quality of speech therapy services being provided to students with ASD during periods of distance learning? 2) What factors determined the quality of speech therapy services provided to students with ASD during periods of distance learning?

Benefits of the Study

The benefit of this study is a contribution to our understanding of the impact distance learning during the COVID-19 pandemic had on services for children with ASD as perceived by the SLPs who delivered services.

Chapter II

Literature Review

The following chapter provides an overview of the literature regarding speech therapy for students with autism spectrum disorder (ASD), telepractice as a service model, telepractice as a service model for students with ASD, and the impact of the COVID-19 pandemic on individuals with ASD.

Speech Therapy and Autism Spectrum Disorder

Due to the communication deficits and difficulties often associated with ASD speech language pathologists (SLPs) "play a central role in the screening, assessment, diagnosis, and treatment of persons with ASD." (American Speech Hearing Association [ASHA], n.d.-a). ASD is a spectrum, and therefore the therapy services being provided to individuals with ASD vary for each individual. Regardless of these differences, ASHA states that service delivery is to focus on the natural learning environment to encourage generalization of skills beyond the therapy setting (n.d.-a). The goal of these services is to "improve social communication and other language skills and to modify behaviors so that the individual is better able to develop relationships, function effectively in social settings, and actively participate in everyday life." (ASHA, n.d.-a).

Evidence-Based Treatments

ASHA created an evidence-based practice model for SLPs to use to help ensure the decisions being made are evidence-based and will be high quality for each individual client (ASHA, n.d-b). This model highlights the main three areas that should be taken into consideration: the external scientific evidence, the perspective of the treating professional, and the perspective of the client and their caregivers/families (ASHA, n.d.-b). Each of these factors should be analyzed

and considered when making decisions for clients. It is especially important to consider all three factors on an individual basis, as each client seen is unique.

A variety of treatments and therapy techniques to use with individuals with ASD exist and are being utilized by SLPs and other professionals who work with this population. A recent systematic review published by the National Clearinghouse on Autism Evidence and Practice Review Team, aimed to identify the practices and treatment methods for ASD that would be considered evidence-based, or based in the scientific method (Steinbrenner et al., 2020). This review included a previous review that covered the years 1990 – 2011 and included articles for the years 2012 – 2017. The total number of articles reviewed was 972. In these articles, there was a total of 28 different intervention types that were determined to be evidence-based (Steinbrenner et al., 2020).

ASHA's practice portal on ASD also lists a variety of treatments and service delivery models that can be used in speech therapy to treat individuals with ASD (ASHA, n.d. -a). Many of these treatments were similar to those determined to be evidence based in Steinbrenner et al.'s systematic review. Treatments that overlapped included augmentative and alternative communication, discrete trial training, and peer-based instruction (ASHA, n.d.-a; Steinbrenner et al., 2020). Many of these treatments are typically delivered in-person and are intensive and hands-on, requiring training of professionals providing the services (ASHA, n.d.-a). Neither article listed any types of treatment that were explicit for use with telepractice. Regardless of the treatment chosen, they are to be considered on an individual basis prior to use in therapy.

Telepractice as a Service Delivery Model

Telepractice, or the use of technology to implement a service, is an appropriate service delivery model to carry out treatment and assessment services provided by a speech-language

pathologist or an audiologist (ASHA, n.d.-c). According to ASHA, speech therapy services can be provided in this format if the quality is equivalent to services that would be provided in a face-to-face format (n.d.-c). In any service delivery model, it is important for a clinician to take into consideration the needs of each individual when deciding what is best practice for that client. This remains true when considering the use of telepractice for individuals.

According to ASHA, a client's physical and sensory characteristics, behavioral characteristics, communication characteristics, and the resources the client has available to them within their environment must be considered (n.d.-c). These factors will all have an impact on a client's ability to attend to therapy and make progress towards goals. When at all possible, a clinician should take into consideration these factors before seeing a client via a telepractice format.

Chaudhary et al. (2021) completed a recent qualitative study to "subjectively assess the feasibility & acceptance of telerehabilitation" (p. 366) when used to provide speech-language therapy to individuals with speech and language disorders. Participants in Chaudhary et al.'s study were aged 15 or older and receiving services for a voice, fluency, swallowing, or adult neurogenic disorder (2021). A total of 20 participants received speech and language services first in person, and later via a telepractice system. The participants and their therapists then completed a survey to identify their preferences and describe progress. It was found that 16 of the participants preferred the telepractice format, while 17 therapists were satisfied and please with the outcomes. The researchers determined that that "in carefully selected patient groups, telepractice can achieve progress and satisfaction scores at par with the conventional face-to-face therapy" citing the study's limitations of a small sample size (Chaudhary et al., 2021).

SLP's Perspective

A few studies have analyzed the perspective of an SLP when it comes to providing telepractice services (Hines et al., 2015; Sylvan et al., 2020; Tambyraja et al., 2021; Tucker, 2012). Two studies were completed when telepractice services were first gaining popularity, one quantitative and one qualitative (Hines et al., 2015; Tucker, 2012). The other two were survey studies completed by school-based SLPs in response to the COVID-19 pandemic (Sylvan et al., 2020; Tambyraja et al., 2021). They were both completed in spring of 2020, following the 2019-2020 school year.

Early Telepractice Studies. Two earlier studies completed on telepractice by Hines et al. (2015) and Tucker (2012) both had the goal of discovering the feelings and attitudes that school based SLPs have towards the use of telepractice but achieved this in different ways. The first study was a survey study completed in 2012 by Tucker. The survey was sent to 1900 school based SLPs in an unnamed northeastern state. Of the 170 respondents, only 1.8% were currently using telepractice (Tucker, 2012). The majority of respondents had either neutral or negative feelings towards telepractice and were skeptical of its use for assessment and rapport building, with many questioning the ability to make a connection through the computer (Tucker, 2012). Although this survey study demonstrated the attitudes of some school-based SLPs, the results are limited due to a small sample size and limited region.

A qualitative approach to the same topic was taken in 2015 by Hines et al. through a series of interviews. Participants were recruited in Sydney, Australia with the aim of not just identifying their attitudes towards telepractice, but also the factors that affect those attitudes. The 15 participants were school-based SLPs who either had experience with or were currently providing services via telepractice. The interviews revealed that SLPs initially had mixed

feelings towards telepractice, being excited to try something new but unsure about its efficacy. Once the SLPs learned they can still form relationships with their clients, and that the technology is reliable they realized that telepractice is an effective service delivery model (Hines et al., 2015). These interviews provided answers to some of the questions posed by SLPs in Tucker's 2012 survey, demonstrating that the SLPs were able to build rapport with clients and positive and reliable technology experiences.

COVID-19 Studies. In contrast to these two studies, in which therapists were completing telepractice as planned, the next two studies captured the experience of school-based SLPs who were forced into telepractice without choice. In March of 2020, schools across the United States were forced into periods of distance learning as a result of the COVID-19 pandemic. This left school-based SLPs with no choice but to finish out their school year of speech therapy services via a telepractice format.

The first study, published in 2020 by Sylvan et al. was a response to a survey completed by ASHA in May of 2020. The authors of the study wanted to gather information about the work of school-based SLPs and Audiologists during COVID-19 and add to the previous information gathered by ASHA (2020). Participants included 280 school-based SLPs and focused on their services for all children. A survey was created and sent out, with questions focusing on five main areas: "(a) communication with the school district, (b) transition in services, (c) changes in job requirements for SLPs, (d) confidence and workload appropriateness, and (e) personal reactions and reflections" (Sylvan et al., 2020). Across all five areas, experiences and perspectives of the respondents were mixed, reflecting that the experience during COVID-19 was very individualized and dependent on each school district and situation (Sylvan et al., 2020). The majority of SLPs were, however, able to agree on some key aspects including the importance of

timely and clear communication from districts, the importance of working in a community, and the feeling that they are better prepared for the future (Sylvan et al., 2020).

The second study completed by Tambyraja et al. (2021) in the aftermath of the COVID-19 pandemic took place in June of 2020 and was completed by 1109 school-based SLPs. Similar to the study completed by Sylvan et al. in 2020, Tambyraja et al.'s study aimed to gather further information regarding the experience of SLPs during the time period of March – June of 2020. The survey was distributed via social media, ASHA listservs, and state associations (Tambyraja et al., 2021).

The SLPs surveyed delivered their services in variety of formats with 60% of respondents engaging in telepractice sessions while others sent home materials to students or had no contact with their students (Tambyraja et al., 2021). SLPs were also asked to identify the factors that were barriers to their service delivery. The most common barriers were poor internet access for students, and low attendance and engagement on the students' part (Tambyraja et al., 2021). Similar to Sylvan et al.'s findings, Tambyraja et al. (2021) concluded that although the SLPs were having a similar experience on the outside, there were many internal factors impacting their individualized experience.

These two studies together reveal the experiences that school-based SLPs had in the immediate aftermath of COVID-19 during service delivery. The researchers of both studies concluded that SLP's experiences were very individualized, with varying factors such as their school district, state, and home factors that determined what their experience was like. When it comes to looking forward, both surveys had similar findings. They found that the SLPs had hope that the experience better prepared both them and their districts for future events and the

continuing implications of the COVID-19 pandemic (Sylvan et al., 2020; Tambyraja et al., 2021).

Telepractice as a Service Delivery Model for Individuals with ASD

A 2010 systematic review completed by Boisvert et al. worked to determine the outcomes of using telepractice services for providing treatment to individuals with ASD. The researchers reviewed eight studies previously conducted on the topic. They analyzed participant characteristics, technology used to facilitate services, types of services being delivered, and the results of services. Of the eight studies, seven authors reported they had successful outcomes. Resulting in the conclusion that the use of telepractice is promising, but further research is needed (Boisvert et al., 2010). The authors cited limited research and few participants as limits to their research and a need for further research (Boisvert et al., 2010).

In 2018, Sutherland et al. conducted a similar systematic review, reviewing all the literature that had been published on the topic since Boisvert et al.'s review completed in 2010. The new systematic review found that there had been a large increase in the amount of research completed on the topic since 2010, reflecting the increase of reliable technology during that time period and an increasing relevance of the topic (Sutherland et al., 2018). This review included 14 studies that involved a total of 284 participants (Sutherland et al., 2018) compared to the previous review's inclusion of eight studies involving a total of 46 participants (Boisvert et al., 2010). The authors of this new review aimed to provide an update on the research and provide information for speech-language pathologists wanting to use telepractice for their clients with ASD. Despite the increase in research and relevance of the topic, the researchers came to a similar conclusion as the previous authors. The authors determined that there are promising outcomes in this growing service delivery model, yet further research is still needed to ensure

that the telepractice services are “at least equivalent to services provided via intervention as usual.” (Sutherland et al., 2018).

Both Sutherland et al. (2018) and Boisvert et al. (2010) identified positive evidence for using telepractice with individuals with ASD, as long as the services being provided are equivalent or better than in person (Boisvert et al., 2010; Sutherland et al., 2018). Determining if services are equivalent or better is not easy. It is dependent on a variety of factors but primarily the individual with ASD who is receiving services, and what is going to be considered “better” for them (Sutherland et al., 2018).

Parent/Caregiver Perspective. Aside from the systematic reviews that have been completed to determine the effectiveness of telepractice for treating individuals with ASD, studies have been conducted to gain the client/caregiver perspective. One of these studies was a parent and student survey sent to participants who received telepractice speech therapy services through a school during the COVID-19 pandemic in Hong Kong (Lam et al., 2021). Eighty-five students were included in the survey, with 53 of the students having an ASD diagnosis (Lam et al., 2021). A 19-question survey was sent to the families to determine their satisfaction and future preferences. Both parents and students found the telepractice services to be effective, however both groups also rated telepractice services as less effective than typical in-person services (Lam et al., 2021). Based on quantitative data, the authors found that the majority of parents preferred in-person services, while the students were indifferent (Lam et al., 2021). Due to the quantitative nature of the survey, no reasons were cited by either parents or students. The authors concluded that although both groups found telepractice to be effective and satisfactory, it is important to consider the parent perspective as telepractice often requires higher involvement on their parts (Lam et al., 2021).

COVID-19 and Children with ASD

The COVID-19 pandemic caused a disruption in the lives and routines of many individuals around the world. For children with a diagnosis of ASD, however, the pandemic caused social isolation and a disruption in their daily routines both at school, at home, and medical services being provided to these individuals (Bellomo et al., 2020). It has been found since the pandemic begin that individuals with ASD are more vulnerable to the impacts of the pandemic due to their already present difficulties in "communication, socialization, and executive functioning differences that are inherent of the diagnosis" (Baweja et al., 2021). Additionally, there are many disorders co-morbid with ASD that leave them vulnerable such as anxiety disorders and intellectual disabilities (Baweja et al., 2021).

One of the major implications that occurred with COVID-19 was any sense of predictability and routine being removed. This may result in aggressive behaviors or anxiety in those with ASD who benefit from predictable daily routines (Bellomo et al., 2020). Often individuals with ASD receive services from professionals such as occupational therapists and SLPs who can provide treatment and strategies for regulating their sensory experiences and helping them to communicate through those challenges (Bellomo et al., 2020). In Bellomo et al.'s 2020 article, the authors cite the lack of these services during the pandemic as potential causes of increased behaviors.

COVID-19 caused a disruption in the medical services being provided to all individuals, not just those with ASD. However, many individuals with ASD receive and require a higher number of medical appointments and therapy services than others. As previously mentioned, these may include intensive speech therapy, occupational therapy, and applied behavior analysis (ABA) therapy (Bellomo et al., 2020). These services are not just an important part of a routine

for many individuals but provide essential services and interactions with others. In the case of speech therapy services, being able to interact with others and engage in social environments is important. Naturalistic environments and peer interactions are often key parts of a child's speech therapy services (ASHA, n.d.-a). With the COVID-19 pandemic, these naturalistic environments, and interactions, often peer-based, were no longer available for use in therapy.

Parents' perspective

A study was completed in Spain to look further at these implications for individuals with ASD and identify more specific ways in which the "lock-down" period of COVID-19 impacted individuals with ASD from the perspective of their parents/caregivers (Mumbardo-Adam et al., 2021). In March of 2020, the country of Spain entered a period of "compulsatory quarantine" in which citizens were not to leave their houses unless identified as an essential worker or having an intellectual disability (Mumbardo-Adam et al., 2021). The authors of the article conducted an online survey of 47 families who had at least one child with a diagnosis of ASD. The survey included questions about the family's demographics, the child's management of quarantine, family management of quarantine, and supports provided by the schools or private institutions during that time (Mumbardo-Adam et al., 2021).

The results of the study were mixed and varied by family. Some of the individuals developed negative and more aggressive behaviors during the time period. While other individuals began to interact more with their family and developed better self-care behaviors such as personal hygiene routines (Mumbardo-Adam et al., 2021). Most parents reported that their child appeared to be happier, calmer, and more peaceful then prior to quarantine. The study also found that more families received services and supports from private institutions then they did from the schools. The authors concluded that both families of children with ASD and

children with ASD managed the quarantine period “better than expected” (Mumbardo-Adam et al., 2021). Despite these positive outcomes, this research is limited as the research focused on a specific geographical area of Spain and therefore cannot be generalized to all areas of the world as each country and even some regions within those countries handled the pandemic in a unique way.

Another study completed by Levante et al. (2021) in Italy aimed to look at the psychological impact the changes had on the families of children with ASD and on families with children who are typically developing (TD). Citizens of Italy experienced a “mandatory lockdown” similar to the lockdown in Spain in which individuals were only allowed outside of the residence for “essential” matters (Levante et al., 2021). 120 families participated in an online survey and provided their insights and the psychological impact they experienced during lockdown. It was found that the distress of both parents of children who are TD and children who have ASD were directly impacted by the emotions they perceived their child to be experiencing (Levante et al., 2021). The researchers reported that parents of children with ASD reported that they saw more positive emotions from their children, but also more negative behaviors which resulted in higher levels of parental distress.

A study similar to the previous two (Levante et al., 2021; Mumbard-Adam et al., 2021) was completed in the United States to determine the impact COVID-19 has had on individuals with ASD from the perspective of families (Manning et al., 2021). The survey was conducted in Michigan and distributed online through assistance from the Autism Alliance of Michigan (Manning et al., 2021). The group helped researchers to send the survey out to families who have children with ASD. A total of 471 surveys were completed. The results of the survey indicated that caregivers felt as though the COVID-19 pandemic caused high levels of distress and

disruption for individuals with ASD (Manning et al., 2021). Manning et al.'s survey also found a positive correlation between the caregiver stress level and reported severity of ASD (2021). The survey included a question regarding the level of support received by various services during the pandemic. In order from greatest amount of support to the least amount of support, the services were as follows: family and friends, school, therapy centers, mental health services, and parent support groups.

Although all three of these studies were completed in different countries, it demonstrates that the feelings and attitudes experienced by families and caregivers were similar regardless of the country they reside in. Across all three groups, many children appeared to have been happy and in a positive mood throughout the time period despite increased aggressive behaviors (Levante et al., 2021; Manning et al., 2021; Mumbardo-Adam et al., 2021). These studies examined the family and caregiver perspectives, however did not address perspectives on therapies provided during this time.

Summary

This chapter discussed the evidence-based treatment in speech therapy for individuals with ASD, telepractice as a general service delivery model and for students with ASD, and the impact COVID has had on individuals with ASD. Authors of two systematic reviews concluded that research is limited in the area of telepractice for students with ASD, and further research is needed to determine the efficacy (Boisvert et al., 2010; Sutherland et al., 2018). SLPs have been surveyed on their experience providing services via telepractice during the COVID-19 pandemic, however, this review of the literature did not identify any studies explicitly related to school based SLPs evaluating their own experiences and perceptions of quality for providing telepractice services specific to students with ASD. This study proposed to address that research

question. How has the COVID-19 pandemic impacted the quality of speech therapy services being provided to students with ASD during periods of distance learning (Sylvan et al., 2020; Tambyraja et al., 2021). In the next chapter, the research methodology for this study is provided in detail.

Chapter III

Methodology

The purpose of this study was to discover the impact distance education has had on the speech therapy services being provided to students with autism spectrum disorder (ASD) from the perspective of practicing SLPs implementing intervention. The focus was on the 2020-2021 academic school year. The study sought to identify the impact that was had on the quality of therapy, and what factors impacted the level of quality.

Study Design

This study utilized a non-experimental survey design to gather information regarding the SLP experience of providing services to students with ASD during the 2020-2021 academic year. The survey was primarily quantitative and included multiple-choice, multiple-select, and Likert scale questions. Open-ended questions were also included in the survey to allow participants to share specific details about their personal experience that may be unique. The survey and study methodology received approval from the Minnesota State University Moorhead Institutional Review Board on May 19, 2021.

Participants

A random sample of 2000 addresses for practicing SLPs across all 50 states was purchased from the American-Speech Language Hearing Association (ASHA). The sample was taken from the following ASHA Special Interest Groups (SIGs): SIG 1: Language Learning and Education, SIG 16: School Based Issues, SIG 18: Telepractice. The survey targeted SLPs who worked in a school setting with individuals with a diagnosis of ASD during the 2020-2021 academic school year. It was a requirement for participants to have had experience working with students with ASD in some form of distance education during the school year.

Survey Instrument

After reviewing current literature on the topic, a survey instrument was developed to gather data related to the guiding research questions (see Appendix A). The first section of the survey included demographic information to learn about the work experience of each speech-language pathologist (SLP). The second section of the survey included a series of Likert-scale, multiple-choice, and multiple select questions. The aim of these questions was to discover the factors that impacted each SLP's experience. The survey ended with a third section with open-ended questions to allow the SLPs to share any other relevant experiences.

Data Collection Procedures

Following the development of the survey instrument, an online survey was developed using Qualtrics. A paper copy of the survey was then sent through regular mail in May of 2021 to the 2000 addresses purchased from ASHA. The survey included an informed consent form and a return envelope. Included on the informed consent was a QR code and the survey link for optional completion of the survey online using Qualtrics. Returned paper surveys were entered into the Qualtrics software by the investigator to allow for analysis of all responses in a consistent format. No identifying information was included in the survey. All data was exported from the Qualtrics system to Microsoft Excel for analysis. Descriptive analysis was used on the questions which resulted in quantitative data. Thematic analysis was used for the final set of open-ended questions that resulted in qualitative data. The survey remained open until October 1, 2021.

Data Analysis

Data analysis was completed in two stages. The first stage used descriptive statistics to examine the multiple-choice, multiple select, and Likert-scale questions. Descriptive statistics (e.g., frequency, mean) were used to compare responses and display the data in charts and graphs.

In the second stage of analysis, thematic analysis was used to analyze the qualitative data provided by participants in the open-ended questions and questions where they were asked to "please describe". Coding was used to categorize each response into various categories. From there, the most common themes were able to be identified. To reduce potential bias during data analysis, the investigators separately coded the responses for each question. The investigators then discussed their codes and identified larger themes within the codes. This method was used to establish inter rater reliability.

Reflexivity Statement

It is worth noting that both investigators have professional experience regarding the topic of research and have provided services via telepractice. As a graduate student within the field of speech-language pathology I have clinical experience providing telepractice services during this time period to individuals with ASD. Additionally, as a graduate student and instructor in the field, we recognize our potential bias that may have impacted our data analysis work.

Chapter IV

Results

The focus of this study was to answer the following research question, using a nonexperimental survey research design. Of the 2,000 surveys mailed out, 301 surveys were returned, representing a 15% response rate. 141(46.8%) surveys were returned by mail and 160 (53.2%) completed online. The first two required questions of the survey determined if the participant was a school-based SLP who provided services online during the 2020-2021 school year and identified if they worked with students who have an autism spectrum disorder (ASD) diagnosis. If the participant answered no to either of these questions, the survey was discontinued. Of the 301 responses, 32 (10.6%) participants answered no to one of the questions. One of the mailed surveys encountered damage while being mailed and could not be included due to the damage leaving answers unreadable. Therefore, the following results pertain to the remaining 268 respondents that fit the desired profile, representing 13.4% valid surveys.

Demographics

The SLPs participating in the survey represented 43 states and the District of Columbia. California and New York had the highest number of responses with 33 and 28 respectively. Participants were also asked to indicate the number of years they have been a practicing SLP, the number of years they have worked in a school, and the number of years they have worked with students who have an ASD diagnosis. The average, mode, and range for these responses are in shown in Table 1.

Table 1

Participants' Years of Experience

Question	Average	Mode	Maximum	Minimum
Years as an SLP	19.5	20	49	1
Years in a school	17.0	5	49	0
Years working with ASD	18.1	20	49	3

Participants were also asked to indicate whether they utilized telepractice with students with ASD prior to the pandemic. Fifteen (5.6%) of the respondents have used telepractice, while 254 (94.4%) had not. A follow up question had the respondents estimate in a percentage range the amount of services provided online for students with ASD prior to the pandemic and in the 2020-2021 school year. Pre-pandemic data is displayed in Figure 1 and 2020-2021 school-year data is displayed in Figure 2. Prior to the pandemic, 257 (95.9%) of respondents reported that 0-25% of their services for students with ASD were online, while nine (3.4%) reported that 76-100% of their services for students with ASD were online. For the 2020-2021 school year, 99 (37%) participants reported 0-25% of services for this population were online, and 89 (33%) reported that 76-100% of services were online.

Figure 1

Pre-Pandemic Telepractice Use for Students with ASD

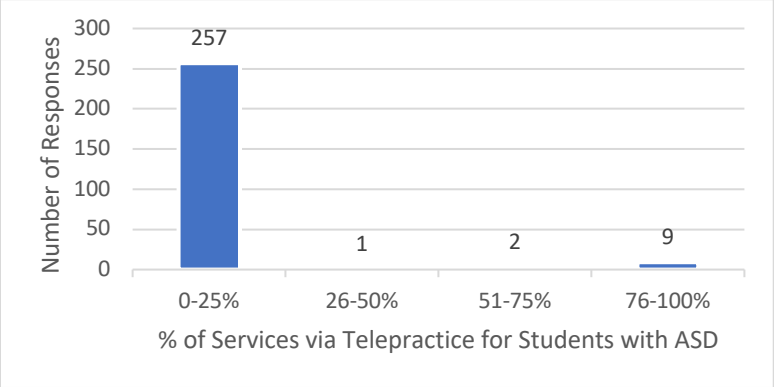
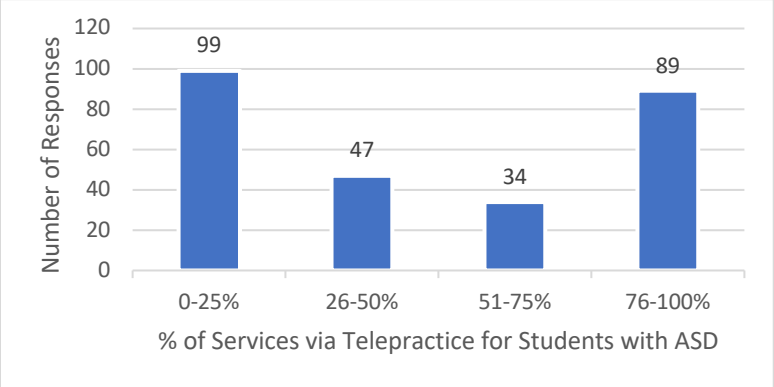


Figure 2

2020-2021 School Year Telepractice Use for Students with ASD



The data from these two questions show the significant shift to online services created by the pandemic. Prior to the pandemic, only nine (3.3%) respondents were using telepractice 75-100% of the time for students with ASD. In the past school year, this number increased to 89 (33%) respondents who use telepractice 75-100% of the time for students with ASD.

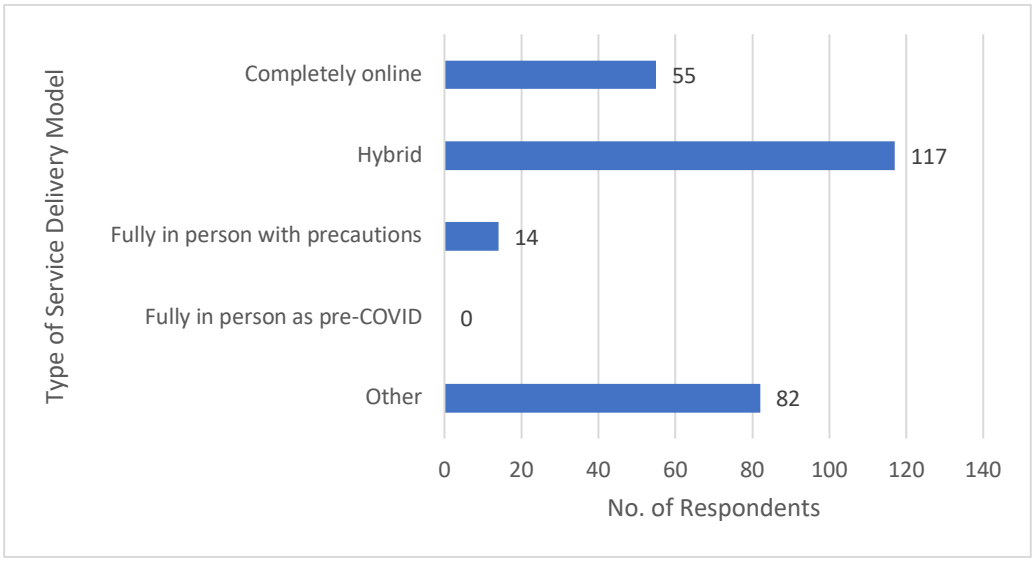
Format of Services

Participants were asked to define more specifically what their online services looked like using the following multiple-choice options: fully online, hybrid, fully in person with precautions, fully in person like pre-covid, or other. The majority, 117 (44%) indicated that their

services were in a hybrid format, with students online some days and in person others. There were no respondents that provided services fully in person as they had done pre-COVID. 82 respondents (41%) indicated that their services fit into the "other" category. Among these responses, the most common were: format varied depending on the district's policies, and format was mixed depending on if parents chose to keep their students home. Results are shown in Figure 3.

Figure 3

Format of Service Delivery



Barriers and Facilitators

Next, survey respondents were asked to indicate which factors were barriers and which facilitators supported a successful telepractice experience. This was split into two questions, one regarding barriers and one regarding facilitators. The following answers were given as choices for both questions, with participants asked to select all that apply: administrative support, parental support, access to technology, other (please describe). The results are shown in Figures 4 and 5.

Figure 4

Barriers and Facilitators

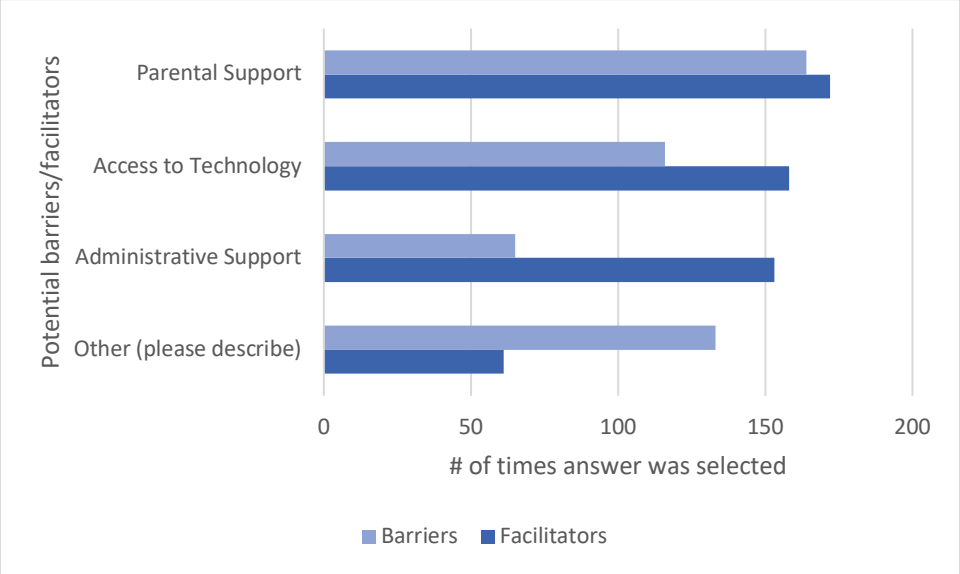
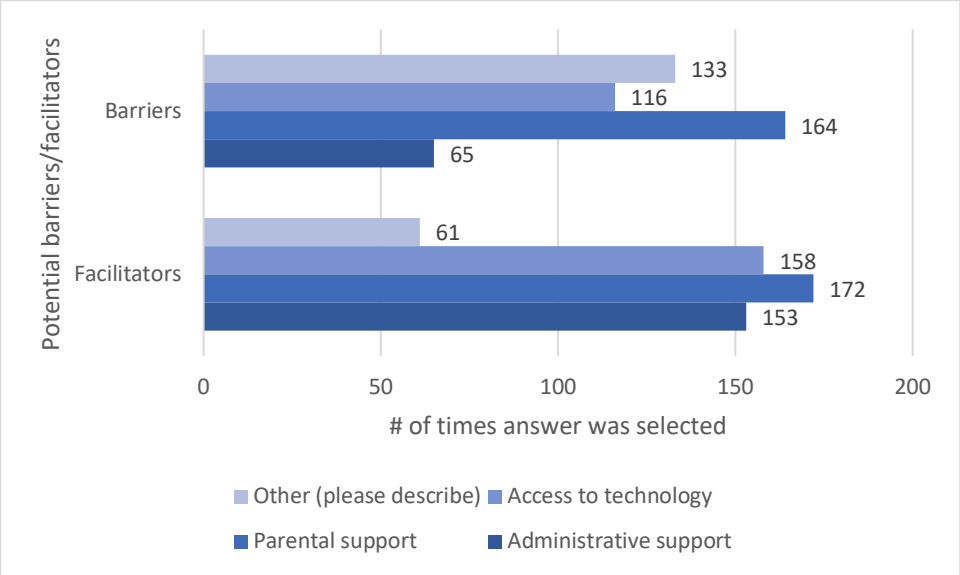


Figure 5

Barriers and Facilitators



Barriers

The first question asked which of the possible choices were barriers to their success during this time. The barrier chosen most was parent support which was selected 164 times

(34.3%). The barrier with the second highest selections was the "other" category, being chosen 133 (27.8%) times. Respondents who chose other were asked to then describe their other barriers. These responses were analyzed by the researcher into codes. Within these responses, the most common barrier was student attention/engagement levels, which was mentioned by 34 (7.1%) participants. Another barrier frequently mentioned by participants was having access to online applications and materials. For a complete list of codes, see Appendix B.

Facilitators

The second question provided respondents with the same answer choices but in regard to what a facilitator was, rather than a barrier to their success during this time period. The most frequently chosen option for facilitators was parental support being chosen 172 (31.6%) times. However, it was followed closely behind by access to technology and administrative support with 158 (29%) and 153 (28.1%) selections respectively. The category of other was only chosen 82 times for facilitators. Once again, respondents were asked to describe what their other facilitator was. The researcher analyzed and coded these responses. The most common facilitator indicated as other was the SLP's department and colleagues, which was mentioned 21 (3.9%) times. The second most common was the SLP's personality and characteristics that helped them to succeed. SLP's listed their personal willingness, creativity, determination, flexibility, and perseverance as helping them to succeed. For a complete list of codes, see Appendix C.

Likert Scale

The next question included a series of 12 statements in which participants were asked to indicate their agreement with the statement on a five-point Likert scale. The Likert scale included the following rating options: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. All 12 statements had at least one respondent who strongly agreed and at least

one respondent who strongly disagreed with the statement. The mean, standard deviation, and number of responses for each statement is included in the Table 2.

Table 2

Likert Statement Responses

Likert Statement 1 - Strongly Disagree 2 - Disagree 3 - Neutral 4 - Agree 5 - Strongly Agree	Number of Responses	Mean	Standard Deviation
My school district adequately supported my service delivery.	266	3.8	1.2
I have seen a positive change in my students with ASD as a result of the learning changes.	267	2.8	1.1
I have seen a negative change in my students with ASD as a result of the learning changes.	266	3.2	0.9
Distance education has changed the efficacy (the ability to produce a desired or intended result) of my therapy services in a positive way.	266	2.9	1.1
Distance education has changed the efficacy (the ability to produce a desired or intended result) of my therapy services in a negative way.	266	3.3	1.3
As a result of distance learning the amount of time I spend with each student has decreased.	266	2.7	1.3
My own access to technology for distance learning has had a negative effect on my service delivery.	267	2.2	1.1
My personal knowledge of available technology for distance learning has had a negative effect on my service delivery.	267	2.5	1.3
Limited student access to technology for distance learning has had a negative effect on my service delivery.	267	3.1	1.3
As a result of this experience, I feel I have become a more well-rounded clinician.	266	4.0	0.9
If I were to be faced with distance learning again (due to pandemic, natural disaster, etc.) I feel better prepared.	267	4.4	0.7

Findings of interest from Likert Scale Statements:

My own access to technology for distance learning has had a negative effect on my service delivery. Of the 267 participants who responded to this question, 38.6% disagreed with this statement, while 32.6% strongly disagreed. In contrast to this, only 17.2% felt strongly agreed or agreed with this statement. The majority of respondents, or 71.2%, felt as though their personal technology access did not impact their service delivery. The transition to online learning required access to technology, yet the results describe fewer negatively affected by access to technology.

As a result of this experience, I feel I have become a more well-rounded clinician. 266 participants responded to this statement with just over half, or 50.4%, indicating that they "agree" that they are now more well-rounded clinicians. Another 28.2% strongly agreed with the statement. This created a total of 78.6% respondents who felt as though they are now a more well-rounded clinician following the 2020-2021 academic school year.

If I were to be faced with distance learning again (due to pandemic, natural disaster, etc.) I feel better prepared. This statement had 267 participants indicate their level of agreement with a strong majority either agreeing or strongly agreeing with the statement. A strong majority, 94.3% indicated that they either agreed or strongly agreed with the statement. The number of respondents was close between the two options with 124 who agreed, and 128 who strongly agreed. Only 5.7% of respondents made up the group who strongly disagreed, disagreed, or indicated neutral feelings regarding this statement.

Ranking Preference

The next set of two questions provided participants with four service delivery model choices and asked them to rank them based on their feelings and attitudes towards each one. The

service delivery model choices included: fully in-person, hybrid, fully online, or other (please describe). Participants indicated on a scale of one to four, with one being the most preferred choice, what service delivery model they would prefer in two different circumstances. The first circumstance was what the SLP would have preferred pre-COVID, and the second circumstance being their preference looking into the next school-year. Pre-COVID, the majority of respondents indicated their order preference to be the following: fully in-person, hybrid, online, and other. Looking into the next school-year the order of preference did not change, however, the number of responses fluctuated. Full results are shown in Table 3.

Table 3

Ranked Order of Preference for Service Delivery

Service Delivery Format and Ranking	Pre-COVID Preference		Next School-Year Preference	
	Number of Respondents	% of Respondents	Number of Respondents	% of Respondents
Fully In-Person	241	93.8%	222	85.4%
Hybrid	221	86%	198	76.2%
Online	211	82.1%	192	73.9%
Other	237	92.2%	230	88.5%

Qualitative Findings

The final four questions of the survey were open-ended questions that allowed participants to share further details and any other information they wanted to include.

Question one: The biggest change (positive or negative) in my therapy delivery (i.e., intervention strategies)

Participants were asked to share what the biggest change in their therapy delivery was following the 2020-2021 school year. 253 participants provided answers to these questions. The responses were analyzed and grouped into themes. From the content analysis, two main themes stood out: *Family involvement* and *Finding materials/resources*.

Theme: Family Involvement. Of the 253 statements provided, 65 of them were coded as "family involvement. The level of family involvement was described by participants as being both a positive and negative change in their service delivery. Some SLPs stated that an increase in family involvement allowed for better collaboration with families and a chance to see the child interact with their naturally occurring communication partners. For example, one participant said:

> I have always encouraged parent participation (and school staff) whenever possible during therapy. Virtual allowed more parents to attend most every session as they could log on from anywhere & I worked at their schedules even outside of school hours. They love it too and have asked for continued virtual options.

A similar comment was provided by a second participant which stated, "Access to parents and the ability to find out student preferences I might not know for my students who have limited verbal skills." A third participant described her positive feelings towards family involvement stating "For some students, attention span increased due to parent involvement! Being able to work closely with parents weekly was a positive change!"

There were, however, some SLPs that found family involvement to be a negative, as parents got in the way of providing services. One SLP stated "The biggest change for me was

how much input I needed from parents and didn't feel like I got accurate data. Parents inflated abilities or didn't understand how to provide models/prompts." Although there were some negative feelings, the majority of statements regarding family involvement were positive. Only eight (12.3%) participants described parent involvement as a negative change, while the remaining 57 (87.7%) participants stated it was a positive change.

Theme: Finding materials/resources: Finding adequate materials and resources was another primary theme that came out of the analysis. Across 55 statements, SLPs shared that they often had to be creative in what they utilized, but that it also allowed them to find valuable resources that they have, or plan to, use for in-person therapy. One SLP spoke directly to the difficulty of finding adequate materials for the students with ASD when they stated "Became very creative with materials. Pandemic brought new challenges to the ASD students in regard to wearing masks - how they interact, volume, how to read body language, etc.". A second SLP stated directly that their "biggest positive change is increase in digital materials." A third SLP also gave credit to the companies who helped make resources available to all. They stated, "I have a larger repertoire of activities to engage students with both in person and virtually. So many companies made resources available." Although online delivery necessitated the need for new materials, it was overall perceived as a benefit of the experience that will continue to benefit the SLPs in a post-pandemic era.

Question two: Describe your perception of the quality of your services

In this question, participating SLPs were asked to describe how they viewed the quality level of their services. 253 participants provided statements describing their quality. These responses were coded into four categories: neutral, equal to in-person, worse than in-person, and dependent on the student.

One respondent who found their service quality equal to in-person stated “As equally as effective if not more effective. Students appear more willing to attend sessions.” Similar to this statement, a variety of SLPs described their quality as “excellent” or “very good”. In contrast to this, another respondent stated that their quality was “beyond poor. too many tech issues. PC freezing, mics not working. Face to face for speech and language (and most areas) for children is absolutely necessary.” A few participants described their quality as simply “poor”.

Some respondents chose to remain neutral in their thoughts, stating things such as “I did the best I could with what I had available”. One respondent cited that the pandemic was not an easy time for anybody, stating “I adapted to the pandemic. This was a scary, unpredictable time. My quality was great based upon all factors one had to contend with. I had colleagues hospitalized and vented for COVID.” Other participants felt that they were not able to be as effective than they were prior, expressing they were “Not as effective as a therapist. You had to become an entertainer and sessions were shorter.”

Another common response provided by participants was that the quality was dependent on each student. One participant described what it was like for their students with ASD when they stated “For my more advanced students with ASD, this was an amazing, preferred format. For my student with more complex communication needs (with ASD), virtual was more challenging.” Overall, the majority of SLPs demonstrated positive or neutral attitudes towards their therapy quality.

Question three: How have you changed as a therapist?

The third open-ended question asked participants to provide a way that they have changed as a therapist following the 2020-2021 pandemic school year. 248 respondents provided an answer to this question. While the majority of answers described ways that they had changed

for the positive, there were five (2%) who stated they had not changed and 14 (5.6%) who experienced a negative change (i.e. burnt out, exhausted). The positive answers (92.3%) were coded into themes. The two major themes identified were: improved flexibility as a therapist, and improved technology skills and knowledge. Two other notable themes that also appeared in question one were family involvement and materials/resources.

Flexibility was mentioned 68 times within the 248 responses, with many comments stating things such as "I have become more flexible and adaptable. I could do this again if I had to (although I hope I will not have to.)". For those who felt their technology skills and knowledge had improved, they reflected confidence with statements such as "Significantly!! I was the most non-techy person alive prior to COVID. Now I am a Zoom expert!" and "Who knew this 62 year old baby boomer with limited technological skills could be an awesome teletherapist who managed to see all my students during a pandemic - or at least all but 3 from March to July 2020! (& for those 3 google classrooms and phone calls!)".

Question four: Anything else you would like to share:

The survey's final question asked participants to share any other thoughts they had regarding the topic. 138 respondents provided an answer. The content of these responses varied and reflected opinions from all sides of telepractice. Participant answers ranged from sharing favorite and least favorite parts of the experience as well as opinions on telepractice, to sharing their future plans following the school-year.

The following quotes are ones that reflected a positive tone regarding telepractice and the benefits that came from it:

> "I love teletherapy. I wanted to make a change prior to COVID19 but was afraid of such a big learning curve. I have left my school district to work 100% remote for a charter school."
>
> "Many of my Autistic students perform BETTER online. I think have a technology component and not physically present made engagement, attention, and participation better."
>
> "The pandemic was a challenging year, but I am grateful for the learning and growing opportunity it presented. Relationships with colleagues, students, and their families are stronger."
>
> "The students enjoyed the technology. They were fearless."

These quotes demonstrate that there are some SLPs who enjoyed their telepractice experiences and found ways to make it beneficial for students.

The following quotes reflected a negative tone regarding telepractice and the impact for students with ASD:

> "This was the most difficult of my 23 years as an SLP."
>
> "I quit due to lack of support by administration. I will open a private practice within the next year."
>
> "I think children with autism did not get the therapy they deserved when it was online due to Covid."
>
> "As I near retirement age, I used to think that signing with a company and providing teletherapy services part-time would be of interest to me, but I have to say that I have had more than enough of teletherapy."

These quotes greatly contrasted the previous section of quotes. With many SLPs expressing their dislike and negative experiences with telepractice. Together, these two sections of quotes demonstrate the strong opinions individuals have regarding the topic and use of telepractice.

The following quotes contained a more neutral tone regarding the experience, citing the many factors that made the experience different for everyone:

> "Teletherapy success depended on factors such as parent-therapist communication and rapport, technology access for both sides, and individual student needs for engaging in therapy."
>
> "It is my opinion that teletherapy can be effective under certain circumstances, but it is not for everyone."
>
> "Every clinician across the U.S. had a very different experience based on administrative and parental support as well as access to technology. These factors greatly shaped the perceptions and effectiveness of therapy."

These quotes reflected a common theme that was found throughout the survey, that the success and efficacy of telepractice is dependent on a lot of factors. These factors are different for everyone and provided each SLP with a unique experience coming out of the previous school year.

Some participant responses to "Do you have anything else to share" did not warrant a unique theme, yet were interesting, providing additional insight and a reflection of the SLP experiences:

> "The poorest/low SES students were most at risk during the pandemic. Working parents had less availability and less resources. It widens the gap."

"I am not ready to sit 3 inches from unmasked children in September, in the most saliva ridden profession in the school."

"I look forward to the future when I can again provide therapy to my students without use of masks and physical distancing to be more effective at my job."

"It was a wild ride!"

This set of quotes did not necessarily fit into a particular theme, but rather captured some unique insights and opinions from a few therapists experiencing a year of therapy like no other before.

Summary

This chapter summarized the initial quantitative data from the survey of 268 participants who provided services to children on the Autism Spectrum during the 2020-2021 school year and global COVID-19 pandemic. The survey participants represented 43 states and had on average 19.5 years of SLP experience, 17 years of school experience, and 18.1 years of experience working with children on the autism spectrum. The quantitative survey identified facilitators and barriers to success. The most frequent facilitators for success identified were parental involvement, administrative support, and access to technology. The most frequent barriers to success were lack of parental involvement and access to technology. The survey also provided additional insight on factors impacting the experience. The majority of respondents, or 71.2%, indicated they felt as though their personal technology access did not impact their service delivery. A total of 78.6% respondents felt as though they are now a more well-rounded clinician following the 2020-2021 academic school year and the majority (95%) are better prepared to face distance learning in the future.

The qualitative analysis of the open-ended survey questions resulted in two themes related to therapy delivery: the important role of family involvement and improved access to

materials/resources for distance. The two major themes related to the question of how you have changed as a therapist were: improved flexibility as a therapist, and improved technology skills and knowledge. Overall, there were a mix of strong opinions on both ends of the spectrum supporting and opposing the experience and effectiveness of teletherapy and hybrid learning for children with Autism. The final chapter provides additional discussion, implications, and limitations of the data analysis of the study findings.

Chapter V

Discussion

The purpose of this study was to gain insight into the experience school-based SLPs had while providing speech therapy to students with ASD during periods of distance learning in the 2020-2021 academic school year. The study was guided by the following research questions: 1) How has the COVID-19 pandemic impacted the quality of speech therapy services being provided to students with ASD during periods of distance learning? 2) What factors determined the quality of speech therapy services provided to students with ASD during periods of distance learning? This chapter will discuss the potential findings as gathered through the quantitative and qualitative data provided by the participants.

How has the COVID-19 Pandemic Impacted the Quality of Speech Therapy Services Being Provided to Students with ASD During Periods of Distance Learning?

Use of Telepractice. The present study has findings that are comparable to current literature on the topic. In 2012, Tucker completed a survey of school-based SLPs to learn what their experience with telepractice was like. The survey was distributed within one northeastern state and completed by 170 school-based SLPs. The researcher found that 1.8% of the respondents were using telepractice at the time the survey responses were collected (Tucker, 2012). Tucker's 2012 study was focused on all school-based SLPs, not just those working with ASD. Our study had similar findings. with only 5.6% of respondents reporting use of telepractice in the schools prior to the spring of 2020. In contrast to this, 63.2% of respondents reported using telepractice more than 25% of the time during the 2020-2021 school year. This demonstrates that the switch to therapy was an abrupt change for most practicing speech-language pathologists.

Efficacy of Telepractice. Another similar finding between Tucker (2012) and the present study is SLP's attitudes regarding the effectiveness of telepractice. It should be noted, however, that our study focused on individuals with ASD while Tucker (2012) looked at all students. Both surveys posed this question as a Likert statement in which respondents answered the degree to which they agreed with it. The statement used for Tucker's survey was: "Speech-language telepractice services can be as effective, in terms of student progress toward goals, as in-person therapy" (2012). For this statement, Tucker found that the SLPs felt neutral toward this statement. This aligns with our findings of neutrality for the following statements: "Distance education has changed the efficacy (the ability to produce a desired or intended result) of my therapy services in a positive way." and "Distance education has changed the efficacy (the ability to produce a desired or intended result) of my therapy services in a negative way."

Although the literature (Tucker, 2012) and our study support that that SLPs have neutral feelings towards the efficacy of telepractice and the progress students can make. It should be noted that efficacy and quality are subjective measures, and each SLP may have different standards by which to measure this. Additionally, this measure is one that likely looks different for each student.

What Factors Determined the Quality of Speech Therapy Services Provided to Students with ASD During Periods of Distance Learning?

Hines et al. (2015) addressed quality in their pre-covid study examining the factors that impact an SLP's attitude towards telepractice. Through their use of interviews, one of their main findings was that SLPs who were able to build rapport virtually with clients, had a more positive experience (Hines et al., 2015). The participants shared that they were surprised with their ability

to build connections virtually, but that this was aided using therapy assistants who supported the students' behaviors. These main findings were also identified in the themes of our current study. The qualitative statements from participants in our study demonstrated attitudes both consistent with and contrary to those from Hines et al. (2015). Some participants shared that they developed better relationships with students while others did not. In response to the statement "The biggest change (positive or negative) in my therapy delivery (i.e., intervention strategies) is:", one respondent shared their most positive change was "the value of a good connection/relationship with the client to see best results. I put more effort into developing a relationship over the computer.". Another participant shared their differing attitude stating their biggest negative change was "not being able to have that in-person connection". This demonstrates that some SLPs were able to establish connections with students online, while others were not. Those who did not, cited this as a negative change and impact to their therapy.

The use of therapy assistants was another finding from Hines et al (2015) that was consistent with findings of the current study. Although participants did not state directly if a "therapy assistant" was used, many shared that the use of family members to support the behavior of students was one of the most positive changes to their therapy. However, the role this family member or "assistant" played in therapy had an impact on the SLP's perception of the use of them. For some SLPs, the presence of another person helped individuals remain focused and attend to therapy. While others noted that the presence of other individuals during therapy impacted their ability to interact with the student and impacted their data collection. These findings do, however, draw a similar conclusion. With the right supports in their environment, teletherapy can be more successful for some students.

Barriers and Facilitators. Tambyraja et al. (2021) and Sylvan et al. (2020) surveyed school-based SLPs following the onset of the COVID-19 pandemic. The researchers for both surveys had similar findings, demonstrating that SLP's experiences during this time were individualized and dependent on a variety of factors (Tambyraja et al., 2021; Sylvan et al., 2020). These factors included external factors such as guidance provided by the school district, while others were internal factors such as personal resilience.

Tambyraja et al. (2021) and Sylvan et al.'s (2020) findings are consistent with this study, in which the interpretations of qualitative data demonstrate that SLPs had a variety of opposing opinions and experiences following the year of distance education during the 2020-2021 school year. The SLPs also shared the external and internal factors that impacted their experience. The external factors mentioned included the involvement of family and ability to find adequate materials. A variety of internal factors were mentioned, both positive and negative, such as stress level, burn out, flexibility, and creativity.

Both our study and Tambyraja et al. (2021) had a question about barriers within the survey and drew similar conclusions. Within both studies, one of the biggest barriers was parent support/involvement. Tambyraja et al. (2021) stated that many participants shared the lack of parent involvement resulted in poor attendance by students, a theme that also came out of the "other" category from the current study. The 2021 study by Tambyraja mentioned other barriers also found in the "other" category in our study. These included poor internet access for students and distractions within the SLP's lives. A unique finding of our study was that parent support/involvement was also a facilitator for students who had actively involved parents. Through this data, in can be concluded that although each SLP had a unique experience, this experience was shaped for better or worse by similar factors.

Limitations of the Study

Although data collected from this study allowed the investigators to draw conclusions that answered the guiding research questions, there were several limitations identified. One of these limitations was in the recruitment of participants. Since recruitment occurred via ASHA special interest groups (SIG), the survey participants were limited to only SLPs who were in the selected SIG groups. There were potentially other SLPs that could have provided valuable information that were in a different SIG or not involved in any of ASHA's SIGs. Additionally, only 2000 randomly selected SLPs from these SIG groups received the survey. It is also not possible to ensure that the SLPs who participated in the study were a representative sample of the targeted group, school-based SLPs who worked with students with ASD virtually during the 2020-2021 school year, although a randomized sample of SIG members was used to strengthen this limitation. This is due to the survey participants self-identifying if they matched survey criteria.

It should also be noted that the intent of this survey was to focus on the impact distance education had on services for students with ASD. While completing the survey, SLPs may have reported information on all their students, rather than keeping in mind only their students with ASD. This limitation lessens the study's ability to be generalized to all SLPs and to all types of students.

Recommendations for Future Research

The review of the literature for this study did not identify any studies explicitly related to the impact that COVID-19 related distance education had on therapy services for students with ASD. This study proposed to fill this gap in the research. Due to the limitations of this study and the limited literature found for the topic, further research is warranted. To understand the true

impact this had for students with ASD, it may be beneficial for future research to also survey SLPs on the impact the experience had on their students without ASD. This would allow researchers to conclude if what students with ASD experienced was unique to them or was experienced by all students. While our study addressed the SLP perspective, it would also be important for future research to capture the perspective of students with ASD and their families. The impacts of COVID-19 may be long lasting and a topic that will need to be continually researched for years to come.

Further research into telepractice as a service delivery model is also needed. According to ASHA, telepractice services are appropriate if the quality is equivalent to in-person services (n.d.-c). In the wake of the pandemic, however, there was a quick shift away from face-to-face services and into telepractice, without a way to ensure the format was equivalent in quality. Although quality is often an objective measure, the question of what is considered "quality" is raised, and how this can be measured in terms of telepractice. To ensure that telepractice services are "quality" further research into this area is warranted.

Due to the recent high demand for telepractice services, it is important that research is being done across professions to ensure the services are adequate. The pandemic has now lasted from 2019-2022, demonstrating a continued demand for telepractice. As technology continues to advance, it can be expected that this demand will only increase.

Conclusion

This study looked at the virtual speech therapy services being provided to students with ASD during the 2020-2021 school year from the perspective of the school based SLPs. The investigators found that the shift to virtual therapy services was abrupt for many SLPs, as they were not previously providing virtual services, and that many factors contributed to the unique

perspectives of SLPs during this time. It was found that despite this sudden shift, many SLPs feel better prepared for the future and as though they are more well-rounded clinicians due to the experience.

The quantitative data from this study highlighted the factors SLPs perceived as barriers and facilitators to service delivery during this time. A unique finding of this survey was that some factors, such as family support, were considered to be both a facilitator and a barrier for many SLPs. Further analysis of qualitative data reveals that the majority saw family support as positive change to their therapy. This finding is an important take away of the study, revealing a silver lining of the pandemic. In a similar way, access to materials was a common theme cited as both being a facilitator and a barrier to success. These findings are significant as they show that successful telepractice is dependent on a variety of factors that vary with each student and SLP.

The results of this survey captured the unique experience had by SLPs during the 2020-2021 school year. Findings demonstrate that although many factors can be a facilitator and a barrier, majority of SLPs feel better prepared if a sudden switch to telepractice were to occur in the future. It can be concluded from this study that the success of telepractice services was dependent on a variety of internal and external factors for both the SLP and student with ASD.

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Appendix A: Survey

MINNESOTA STATE UNIVERSITY MOORHEAD

Speech Language Hearing Sciences

218.477.2393 **T**
pyleel@mnstate.edu

Hello,

My name is Andrea Spragg, and I am a speech-language pathology graduate student at Minnesota State University Moorhead. I am working on completing an online survey study for my graduate thesis, supervised by Dr. Elaine Pyle. The purpose of my research is to **understand speech-language pathologist (SLP) perceptions of the effects of distance learning on the quality and delivery of speech therapy services provided to students with autism spectrum disorder (ASD) during the 2020-2021 academic school year,** which was impacted by the COVID-19 pandemic.

You have been randomly selected to participate based on your practice interests within the American Speech Language Hearing Association. I am inviting you to take part in an online survey that will help to answer the question of how distance learning has impacted speech therapy services for students with ASD. Completion time is estimated to be 10 minutes. There is an alternative paper option for completion if preferred.

The survey will not require any identifying information and the data will be kept in a password protected computer. No benefits accrue to you for answering the survey, but your responses may benefit future experiences in distance education speech therapy services. The study was approved by Minnesota State University Moorhead Institutional Review Board on May 19, 2021.

You can access the survey in one of three ways: 1) typing in the following URL link, 2) scanning the QR code with your phone, or 3) paper alternative (completing and returning the enclosed survey by mail) – See Attached.

Use the survey link https://mnstate.co1.qualtrics.com/jfe/form/SV_8iCRdtDfCChFSSi or QR code for electronic submission. Complete enclosed paper version as alternative if preferred.

You may reach out with any questions at any time regarding this study. If you have additional questions you may contact Elaine Pyle, Ph.D., M.S./CCC-SLP, Speech Language and Hearing Sciences, *pyleel@mnstate.edu* Any questions about your rights may be directed to Dr. Lisa I. Karch, Chair of the MSUM Institutional Review Board at 218-477-2699 or by e-mail at: irb@mnstate.edu.

We truly appreciate your consideration of this request and are grateful for your gift of time in completing our survey.

Sincerely,

Andrea Spragg
Andrea Spragg
Graduate Student/Student Clinician

Elaine Pyle
Elaine Pyle, Ph.D., MS/CCC-SLP
Associate Professor

Speech Language Hearing Sciences
MINNESOTA STATE UNIVERSITY MOORHEAD
Murray Hall 223A | 1104 7th Avenue South | Moorhead, MN 56563
Phone 218.477.2393 | **Fax** 218-477-4392

Thank you for participating in this study of distance learning for SLPs working with children on the Autism Disorder Spectrum during the COVID-19 pandemic. You are invited to participate in a study of the impact of distance education on therapy services provided to students with autism spectrum disorder during the 2021-2022 academic year. We hope to learn what factors have made this transition to distance learning a positive or negative experience for you and your students with autism spectrum disorder. You were selected as a possible participant in this study because you are either amember of ASHA, a member of ASHA special interest group, or identified as a practicing SLP by your school administrator. Your completion of this survey will serve as implied consent (See cover letter). The study was approved by Minnesota State University Moorhead Institutional Review Board and is estimated to take about 10 minutes. No benefits accrue to you for answering the survey, but your responses will benefit future experiences in distance education speech therapy services. Any discomfort or inconvenience to you derives only from the amount of time taken to complete the survey. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will not be disclosed. Your decision whether or not to participate will not affect your future relationships with Minnesota State University Moorhead. If you decideto participate, you are free to discontinue participation at any time. Use the anonymous survey link https://mnstate.co1.qualtrics.com/jfe/form/SV_8iCRdtDfCChFSSi or QR code in cover letter for electronic submission. Return this paper version as alternative if preferred.

For the following questions, please circle yes or no.
Did you provide services online (or in a different format) during the 2020-2021 academic school year as a result of the COVID-19 pandemic?

Yes **No** (If No, Discontinue Survey)

Do you work with students with a diagnosis of autism spectrum disorder? **Yes No** (If No, Discontinue Survey)

Demographic Questions: Unless otherwise noted, please write your answer in the blank following the question.

1. What is your overall caseload size? _____
2. On average, how many students on your caseload have a diagnosis of ASD? _____
3. What state are you from? _____
4. How many years have you been a practicing SLP? _____
5. How many years have you worked in a school? _____
6. How many years have you worked with students with ASD? _____
7. Prior to the pandemic, did you use distance learning with your students with ASD? (Circle Answer) **Yes** **No**

Please circle the letter that corresponds with your answer.

8. What % of your services for students with ASD were provided via telehealth/distance learning prior to the COVID-19 pandemic?
    a. 0-25%
    b. 26-50%
    c. 51-75%
    d. 76-100%
9. What % of your services for students with ASD are being provided via telehealth/distance learning during the 2020-2021 academic-year?a. 0-25%
    b. 26-50%
    c. 51-75%
    d. 76-100%
10. What format best describes the way that you delivered services?
    a. Completely Online
    b. Hybrid – see students online some days and in-person other days
    c. Fully in person with precautions
    d. Fully in person as pre-COVID
    e. Other (please describe) _____
11. Barriers to my success as an SLP during this time include...(select all that apply)
    a. Administrative support
    b. Parental support
    c. Access to technology
    d. Other (please describe) _____

12. Facilitators to my success as an SLP during this time include...(select all that apply)
    a. Administrative support
    b. Parental support
    c. Access to technology
    d. Other (please describe) _____

Please circle the number that corresponds to the degree to which you agree or disagree with each statement. All questions pertain to the 2020-2021 school-year for students with ASD.

1 = Strongly **Disagree** 2 = Disagree 3 = **Neutral** 4 = Agree 5= Strongly **Agree**

13. My school district adequately supported my service delivery.	**1**	**2**	**3**	**4**	**5**
14. I have seen a positive change in my students with ASD as a result of the learning changes.	**1**	**2**	**3**	**4**	**5**
15. I have seen a negative change in my students with ASD as a result of the learning changes.	**1**	**2**	**3**	**4**	**5**
16. Distance education has changed the efficacy (the ability to produce a desired or intended result) of my therapy services in a positive way.	**1**	**2**	**3**	**4**	**5**
17. Distance education has changed the efficacy (the ability to produce a desired or intended result) of my therapy services in a negative way.	**1**	**2**	**3**	**4**	**5**
18. As a result of distance learning the amount of time, I spend with each student has decreased.	**1**	**2**	**3**	**4**	**5**
19. My own access to technology for distance learning has had a negative effect on my service delivery.	**1**	**2**	**3**	**4**	**5**
20. My personal knowledge of available technology for distance learning has had a negative effect on my service delivery.	**1**	**2**	**3**	**4**	**5**
21. Limited student access to technology for distance learning has had a negative effect on my service delivery.	**1**	**2**	**3**	**4**	**5**
22. As a result of this experience, I feel I have become a more well-rounded clinician.	**1**	**2**	**3**	**4**	**5**
23. If I were to be faced with distance learning again (due to pandemic, natural disaster, etc.) I feel better prepared.	**1**	**2**	**3**	**4**	**5**

For the next two questions, please place the options in order of most preferred (1) to least preferred (4) service delivery by writing the correspondingnumber on the blank.

25. Prior to COVID, rank your preference of service delivery options:
    ___Completely Online
    ___Hybrid – see students online some days and in-person other days
    ___Fully in person
    ___Other (please describe) _____
26. Looking forward the next academic year, rank your preference for the following delivery options for your ASD caseload.
    ___Completely Online
    ___Hybrid – see students online some days and in-person other days
    ___Fully in person
    ___Other (please describe) _____

Open-ended: As a result of your use of distance learning for students with ASD, please respond to the following questions:

27. The biggest change (positive or negative) in my therapy delivery (i.e., intervention strategies) is:

28. Describe your perception of the quality of your services?

29. How have you changed as a therapist?

30. Anything else you would like to share:

Thank you for completing this survey. We are grateful for your willingness to share your time and perceptions with us. You may the enclosed postage return mailing envelope to return your completed survey if the paper option was selected.

Appendix B: Facilitator Codes

Code	Number of Responses
Colleagues/Department	21
Therapist personality/character	11
Webinars (CEUs and personal development)	10
Online apps/materials	9
Online SLPs/Social media	9
District provision	4
Parental Commitment	4
Working more	3
Child engagement	2
Asynchronous delivery	1
Experience/knowledge	1
Low number being online	1
Motivating materials	1
Nothing	1
Student character	1

Appendix C: Barrier Codes

Code	Number of Responses
Student attention/engagement	34
Access to apps/materials	21
Internet stability	15
Experience with telepractice	8
Time restraints	6
Access to teletherapy platform	5
Behavior	5
Internet access	5
Parental commitment	5
Student attendance	5
Technology knowledge	5
State/district requirements	4
Communication with teachers	3
Distractions (for student and SLP)	3
Fatigue/stress	3
Lack of tangible items	3
Collaboration time	2
Getting started	2
Increasing caseload	2
Parent cues/coaching	2
Scheduling	2
Change in social environment	1
Confidence	1
Goals not transferring to online	1
Paperwork	1
Personal attitude regarding telepractice	1
Rapport	1
Students/families basic needs	1